Trend Study 16A-7-02

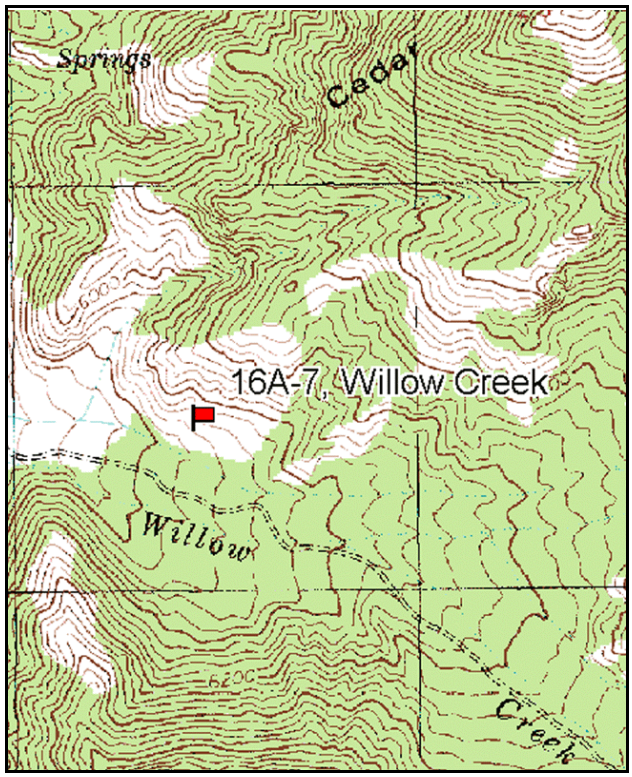
Study site name: Willow Creek. Vegetation type: Stansbury Cliffrose.

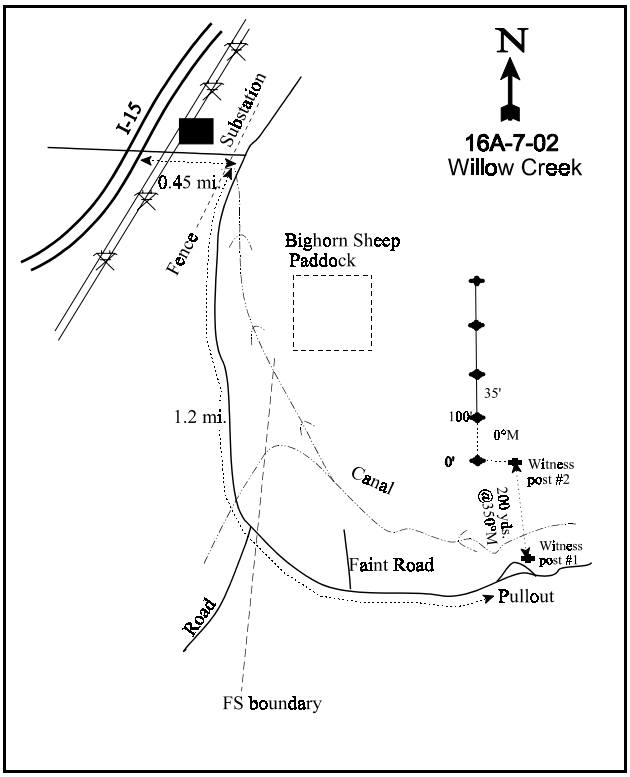
Compass bearing: frequency baseline 0 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

Beginning at the east side of the underpass where Cemetery Road passes over I-15 southeast of Mona, proceed east for 0.45 miles to an intersection. Take the right fork and proceed 1.2 miles to the witness post staying on the main road. From this point, walk 200 yards at 350 degrees magnetic to the witness post (you will need to cross the irrigation canal). The 0-foot baseline stake is 3 paces west of the witness post. It is a green fencepost with a red browse tag, number 3958, attached. The baseline runs at an azimuth of 0 degrees magnetic.





Map Name: Mona

Diagrammatic Sketch

Township 12S, Range 1E, Section 3

GPS: NAD 27, UTM 12S 4405388 N 430445 E

DISCUSSION

Willow Creek - Trend Study No. 16A-7

The Willow Creek study is located on a very steep (45%-50%) south facing slope at the mouth of Willow Creek Canyon, an area considered critical deer and elk winter range. The study area is within the Uinta National Forest. However, unfenced private land lies immediately to the west. This study samples a Stansbury cliffrose community at an elevation of approximately 5,900 feet. Quadrat frequency of elk pellet groups was moderately high at 32% with deer somewhat lower at 11% in 1997. Quadrat frequency numbers were high for deer at 30% and lower for elk at 19% in 2002. Data from a pellet group transect read along the study site baseline in 2002 estimated 88 deer and 36 elk days use/acre (217 ddu/ha and 89 edu/ha). Most of the deer pellet groups appeared to be from winter use while much of the elk was late winter to early spring.

Soils on the site are very rocky and loose, and are derived from limestone parent material. The soil surface appeared highly eroded with abundant bare ground (21%) and pavement (12%) in 1983 when the study was established. Cover of bare ground was 18% in 2002, slightly below 1983 estimates, with pavement estimated at 17%. Effective rooting depth is estimated at approximately 17 inches. Soil texture is a sandy loam with a neutral pH of 7.0. Organic matter is limited at only 1.8%. Phosphorus is also low at only 6.4 ppm. Values less than 10 ppm may be limiting to plant growth and development. Soil pedestalling is common, but erosion appears localized and there is protective ground cover mainly from annual cheatgrass. The erosion condition classification was determined as slight in 2002.

Stansbury cliffrose is the key browse species with a density estimated at 880 plants/acre in 2002. It currently provides 85% of the total browse cover. The population is mature and relatively tall, averaging over 5 feet in height. Recruitment is poor and currently 98% of the population consists of mature and decadent plants. Percent decadency is moderate at 23%. However, this species is long lived making recruitment not as critical as it would be for sagebrush. Use is heavy on available plants. Annual leader growth was measured at 1.1 inches on cliffrose in 2002.

Other preferred shrubs found on the site include small numbers of mountain big sagebrush, fourwing saltbush, white rubber rabbitbrush, and bitterbrush. Broom snakeweed, an undesirable increaser, was abundant and appeared to be expanding in 1997. However, drought conditions have caused the population to decline from 1,780 plants/acre in 1997 to 520 in 2002. Nearly half of the plants sampled in 2002 were classified as decadent.

The herbaceous understory is dominated by cheatgrass which accounted for 62% of the total herbaceous cover in 1997 and 56% in 2002. A wildfire in this plant community would cause the loss of the cliffrose, the key browse for the site. In fact, a wildfire did burn about ½ mile to the south in 2001. The only common perennial grass is bluebunch wheatgrass which provided 15% of the total herbaceous cover in 1997, increasing to 22% in 2002. Bulbous bluegrass, a low value short-lived perennial is also fairly abundant. The forb composition is poor and dominated by pale alyssum and storksbill. Perennial forbs are rare.

1983 APPARENT TREND ASSESSMENT

Soil condition is poor. The relatively high rate of erosion is a fundamental problem on this site. Vegetative trend appears stable, at least for the short term. However, if cliffrose is unable to reproduce satisfactorily, a slow decline in density could occur. Herbaceous composition and density are poor. Cheatgrass is overabundant and constitutes a potential fire hazard. Bluebunch wheatgrass production could be considerably better.

1989 TREND ASSESSMENT

Ground cover data indicates an increase in the percentage of basal vegetative cover and less bare soil in 1989. However, litter cover declined and pavement cover increased to 30%. Trend is considered stable, yet condition is poor with a high erosion hazard due to the steep, rocky slope. While broom snakeweed was the most abundant browse species, the key forage species is cliffrose which increased slightly in number on the density plots. However, more of the shrubs were classified as decadent in 1989 and there were actually fewer mature cliffrose per acre estimated. The cliffrose show moderate to heavy use, yet they have good vigor. Ten percent of the population was classified as young. Populations of the other, less common, browse species are stable. There were no significant changes in the composition or frequency of the herbaceous understory. A few different species of grasses and forbs were identified in 1989, but the major species remain bluebunch wheatgrass, low fleabane, and scarlet globemallow.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable (3)

1997 TREND ASSESSMENT

Trend for soil is stable with a slight increase in percent bare ground (to only 12%) and a decline in pavement cover. Some erosion is still occurring. Trend for cliffrose is stable. The decline in density from 1,033 plants/acre in 1989 to 580 in 1997 is due to the larger sample used that year which gives better estimates for shrubs that have discontinuous distributions. Use is moderate to heavy, while vigor is normal and percent decadence low at only 3%. The undesirable broom snakeweed appears to be increasing. Trend for the herbaceous understory is down slightly due to a decline in the nested frequency of bluebunch wheatgrass which is the most numerous preferred perennial grass found on the site. Perennial forbs are rare. Annuals dominate the herbaceous understory with cheatgrass providing 62% of the total herbaceous ground cover.

TREND ASSESSMENT
soil - stable, but poor condition (3)
browse - stable for cliffrose (3)
herbaceous understory - down slightly and in poor condition (2)

2002 TREND ASSESSMENT

Trend for soil is down slightly due to an increase in cover of bare ground and a decline in litter cover. There is some localized erosion occurring but due to abundant herbaceous cover mainly from cheatgrass, it is not severe. The erosion condition classification was determined to be slight in 2002. Trend for the key browse species, cliffrose, is stable. Use continues to be heavy on available plants but vigor remains good on most plants. Other palatable shrubs occur only in small numbers. The undesirable increaser, broom snakeweed, has declined 3-fold from 1,780 plants/acre in 1997 to 520 plants/acre in 2002. Nearly half (46%) of the remaining population is decadent. Trend for the herbaceous understory is stable with similar sum of nested frequency values for perennial grasses. Sum of nested frequency of perennial forbs has declined slightly but they are still rare. Condition of the understory is poor and dominated by cheatgrass which provides 56% of the total herbaceous cover. This causes a high amount of fine fuels which leaves the entire area susceptible to fire. A fire burned just south of this site in 2001. A fire would eliminate the fire intolerant cliffrose.

TREND ASSESSMENT
soil - down slightly (2)
browse - stable (3)
herbaceous understory - stable (3)

HERBACEOUS TRENDS --
Herd unit 16A, Study no: 7

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
G	Agropyron spicatum	$_{b}$198	$_{b}$191	$_{a}$132	$_{a}$121	71	76	54	56	4.17	5.55
G	Bromus japonicus (a)	-	-	$_{a}$-	$_{b}$19	-	-	-	6	-	.39
G	Bromus tectorum (a)	-	-	354	336	-	-	98	96	17.42	14.48
G	Festuca myuros (a)	-	-	6	-	-	-	2	-	.03	-
G	Poa bulbosa	$_{a}$-	$_{b}$10	$_{b}$32	$_{c}$58	-	5	11	18	1.23	1.50
G	Poa secunda	$_{a}$-	$_{b}$12	$_{b}$27	$_{b}$17	-	5	11	8	.13	.11
Total for Annual Grasses		0	0	360	355	0	0	100	102	17.45	14.87
Total for Perennial Grasses		198	213	191	196	71	86	76	82	5.53	7.17
Total for Grasses		198	213	551	551	71	86	176	184	22.99	22.04
F	Agoseris glauca	-	-	-	1	-	-	-	1	-	.00
F	Alyssum alyssoides (a)	-	-	$_{b}$291	$_{a}$212	-	-	90	75	3.07	.82
F	Artemisia ludoviciana	5	6	6	3	2	3	2	1	.06	.03
F	Asclepias spp.	-	-	-	5	-	-	-	2	-	.18
F	Astragalus utahensis	$_{ab}$2	$_{ab}$5	$_{b}$11	$_{a}$-	2	5	5	-	.24	.00
F	Camelina microcarpa (a)	-	-	3	-	-	-	1	-	.00	-
F	Calochortus nuttallii	1	-	-	-	1	-	-	-	-	-
F	Cerastium spp.	-	3	-	-	-	1	-	-	-	-
F	Cirsium vulgare	1	6	-	-	1	3	-	-	-	-
F	Cryptantha spp.	4	2	-	-	2	1	-	-	-	-
F	Descurainia pinnata (a)	-	-	8	2	-	-	5	2	.03	.01
F	Eriogonum brevicaule	3	4	7	-	1	2	3	-	.06	-
F	Erodium cicutarium (a)	-	-	$_{a}$35	$_{b}$93	-	-	21	38	.18	1.67
F	Erigeron pumilus	$_{b}$34	$_{b}$47	$_{a}$-	$_{a}$-	16	19	-	-	-	-
F	Galium aparine (a)	-	-	8	-	-	-	3	-	.01	-
F	Hackelia patens	-	-	6	-	-	-	4	-	.02	-
F	Holosteum umbellatum (a)	-	-	-	3	-	-	-	1	-	.00
F	Lappula occidentalis (a)	-	-	-	1	-	-	-	1	-	.00
F	Lactuca serriola	-	-	1	2	-	-	1	1	.00	.00
F	Leucelene ericoides	$_{a}$-	$_{a}$-	$_{b}$14	$_{b}$18	-	-	8	8	.26	.19
F	Lygodesmia grandiflora	9	-	-	-	4	-	-	-	-	-
F	Oenothera spp.	-	-	1	-	-	-	1	-	.03	-
F	Penstemon spp.	-	-	-	1	-	-	-	1	-	.03
F	Phlox longifolia	-	4	3	3	-	3	2	1	.01	.15
F	Sphaeralcea coccinea	$_{a}$8	$_{a}$14	$_{ab}$26	$_{b}$31	3	5	9	12	.98	.59
F	Taraxacum officinale	-	-	3	-	-	-	1	-	.00	-
Total for Annual Forbs		0	0	345	311	0	0	120	117	3.30	2.51
Total for Perennial Forbs		67	91	78	64	32	42	36	27	1.68	1.19
Total for Forbs		67	91	423	375	32	42	156	144	4.98	3.70

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Herd unit 16A, Study no: 7

Type	Species	Strip Frequency '97	Strip Frequency '02	Average Cover % '97	Average Cover % '02
B	Artemisia tridentata vaseyana	2	2	.53	.91
B	Atriplex canescens	0	1	-	-
B	Chrysothamnus nauseosus albicaulis	13	3	1.04	.53
B	Chrysothamnus viscidiflorus viscidiflorus	0	0	-	-
B	Cowania mexicana stansburiana	21	33	14.32	14.97
B	Gutierrezia sarothrae	27	16	.39	1.25
B	Purshia tridentata	0	1	-	-
Total for Browse		63	56	16.29	17.66

CANOPY COVER --
Herd unit 16A, Study no: 7

Species	Percent Cover '97	Percent Cover '02
Cowania mexicana stansburiana	-	4

Key Browse Annual Leader Growth
Herd unit 16A , Study no: 7

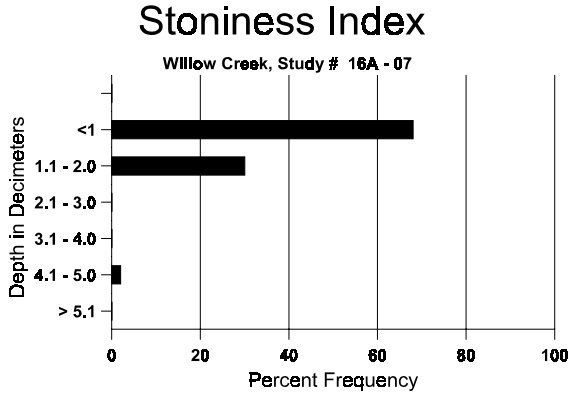
Species	Average leader growth (in) '02
Cowania mexicana stansburiana	1.1

BASIC COVER --
Herd unit 16A, Study no: 7

Cover Type	Nested Frequency '97	Nested Frequency '02	Average Cover % '83	Average Cover % '89	Average Cover % '97	Average Cover % '02
Vegetation	378	363	1.25	8.75	40.62	40.11
Rock	240	262	4.00	8.00	7.40	7.74
Pavement	293	316	11.50	29.75	15.57	16.68
Litter	389	366	62.25	44.75	40.29	36.85
Cryptogams	15	-	0	0	.14	0
Bare Ground	218	243	21.00	8.75	12.06	18.06

SOIL ANALYSIS DATA --
Herd Unit 16A, Study no: 07, Willow Creek

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
17.4	54.8 (14.6)	7.0	58.4	25.1	16.6	1.8	6.4	38.4	.6



PELLET GROUP FREQUENCY --
Herd unit 16A, Study no: 7

Type	Quadrat Frequency	
	'97	'02
Elk	32	19
Deer	11	30

Pellet Transect	
Pellet Groups per Acre	Days Use per Acre (ha)
'02	'02
470	36 (89)
1140	88 (217)

BROWSE CHARACTERISTICS --
Herd unit 16A, Study no: 7

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	1	1	-	-	-	-	-	-	-	2	-	-	-	40	28	50	2
	02	-	-	-	1	-	-	-	-	-	1	-	-	-	20	32	54	1
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	1	-	-	-	-	-	-	1	-	-	-	20			1
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	480			24
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	50%	00%	00%	+ 0%
'02	00%	50%	00%	

Total Plants/Acre (excluding Dead & Seedlings)					
	'83	0	Dec:		0%
	'89	0			0%
	'97	40			0%
	'02	40			50%

Atriplex canescens																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33	43	39	1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	59	46	0
	02	-	-	1	-	-	-	-	-	-	1	-	-	-	20	48	69	1
D	83	1	-	-	-	-	-	-	-	-	-	-	1	-	33			1
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	100%	+ 0%
'89	00%	00%	00%	
'97	00%	00%	00%	
'02	00%	100%	00%	

Total Plants/Acre (excluding Dead & Seedlings)					
	'83	33	Dec:		100%
	'89	33			0%
	'97	0			0%
	'02	20			0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Brickellia spp.																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	3	-	-	-	-	-	-	-	-	3	-	-	-	100			3
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	17	-	-	-	-	-	-	-	-	17	-	-	-	566	6	5	17
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	-
	'89	666		-
	'97	0		-
	'02	0		-

Chrysothamnus nauseosus albicaulis																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	2	-	-	-	-	-	-	-	2	-	-	-	40			2
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	2	-	-	-	-	-	-	-	-	2	-	-	-	66	31	51	2
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33	41	31	1
	97	4	3	5	-	-	2	-	-	-	14	-	-	-	280	29	51	14
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	24	38	0
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	1	2	-	-	-	-	-	-	-	2	-	-	1	60			3
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	+ 0%
'89	00%	00%	00%	+79%
'97	31%	44%	00%	-81%
'02	67%	00%	33%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	66	Dec:	0%
	'89	66		50%
	'97	320		0%
	'02	60		100%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus viscidiflorus																		
M	83	1	-	-	-	-	-	-	-	-	1	-	-	-	33	14	17	1
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	33	Dec:		-
'89	0			-
'97	0			-
'02	0			-

Cowania mexicana stansburiana																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	-	-	1	-	-	-	-	-	-	1	-	-	-	33			1
	89	3	-	-	-	-	-	-	-	-	3	-	-	-	100			3
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	1	-	-	-	-	-	-	1	-	-	-	20			1
M	83	8	6	10	-	-	-	-	2	-	26	-	-	-	866	52	53	26
	89	1	6	7	2	-	-	-	-	-	16	-	-	-	533	81	84	16
	97	-	2	19	-	-	7	-	-	-	28	-	-	-	560	56	66	28
	02	-	-	15	-	-	18	-	-	-	31	2	-	-	660	64	67	33
D	83	1	-	-	-	-	-	-	1	-	1	-	1	-	66			2
	89	2	6	3	1	-	-	-	-	-	12	-	-	-	400			12
	97	-	-	1	-	-	-	-	-	-	1	-	-	-	20			1
	02	-	-	6	-	-	2	1	1	-	3	-	-	7	200			10
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	21%	38%	03%	+ 7%
'89	39%	32%	00%	-44%
'97	07%	93%	00%	+34%
'02	00%	95%	16%	

Total Plants/Acre (excluding Dead & Seedlings)			
'83	965	Dec:	7%
'89	1033		39%
'97	580		3%
'02	880		23%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	44	-	-	-	-	-	-	-	-	44	-	-	-	880			44
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	83	8	-	-	-	-	-	-	-	-	8	-	-	-	266	13	14	8
	89	16	-	-	-	-	-	-	-	-	15	-	1	-	533	8	10	16
	97	44	-	-	-	-	-	-	-	-	44	-	-	-	880	11	11	44
	02	13	-	-	-	-	-	-	-	-	13	-	-	-	260	7	10	13
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	1	-	-	-	-	-	-	-	-	-	-	-	1	33			1
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	12	-	-	-	-	-	-	-	-	2	-	-	10	240			12
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	320			16

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	+53%
'89	00%	00%	12%	+68%
'97	00%	00%	00%	-71%
'02	00%	00%	38%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	266	Dec:	0%
	'89	566		6%
	'97	1780		1%
	'02	520		46%

Purshia tridentata																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	78	194	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	-
	'89	0		-
	'97	0		-
	'02	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Quercus gambelii																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	29	45	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	72	57	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'83	0		-
	'89	0		-
	'97	0		-
	'02	0		-

Rhus trilobata																		
Y	83	3	-	-	-	-	-	-	-	-	3	-	-	-	100			3
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	2	-	-	-	-	-	-	-	-	2	-	-	-	66	24	24	2
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33	28	30	1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	53	114	0
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	3	-	-	-	-	-	-	-	-	-	-	3	-	100			3
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	-20%
'89	00%	00%	75%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'83	166		0%
	'89	133		75%
	'97	0		0%
	'02	0		0%